RUNOFF DIVERSION

What is a Runoff Diversion?

A Runoff Diversion consists of a channel and dike or ridge constructed across the slope to collect and divert runoff. The earthen channel may remain bare, or when necessary to protect it from erosion it will be lined with vegetation, turf reinforcement mats, or rock. The purpose of this practice is to divert excess surface water from one area for use or safe disposal in other areas.

When is a Runoff Diversion Used?

This practice applies to areas where runoff can be diverted and disposed of safely to prevent flood damage, erosion, or sedimentation damage. Specific locations and conditions include:

- Above steep slopes to limit surface runoff onto the slope;
- Across long slopes to reduce slope length to prevent gully erosion;
- Below steep grades where flooding, seepage, or sediment depositions may occur;
- Around buildings or areas that are subject to damage from runoff.

How are Runoff Diversions Designed?

Diversions should be designed by an experienced engineer or technician. Important design considerations include:

Capacity. Diversion channels designed to protect areas such as minor buildings and roads, shall have enough capacity to carry the peak runoff expected from a 25-year frequency, 24-hour duration storm. Diversions designed to protect major structures, homes, school buildings and high capacity roads shall have enough capacity to carry the peak runoff from a 100-year frequency 24-hour duration storm.

Channel Shape. The channel may be parabolic, V-shaped, or trapezoidal in shape. Channel side slopes should be stable and not be steeper than 3:1. A ridge placed on the downstream side of the channel must be high enough to keep the runoff in the channel without overtopping. The ridge height should provide at least 6 inches of freeboard and a settlement allowance of 10%. The ridge shall have a minimum top width of 4 feet

Channel Slope. Runoff Diversion channels must be graded to prevent water standing long enough to drown vegetation in the channel. If possible design velocities greater than 1.5 feet per second should be used to avoid sediment accumulation in the channel. Steeply sloped channels that generate flow velocities greater than 2.5 feet per second will require some type of lining.

Channel Lining. Channel lining materials may include one or a combination of the following materials: vegetation, synthetic erosion control mats(ECM) or turf reinforcement mats (TRM), rock or concrete, as determined by an experienced designer. The following table may be used as a guide:

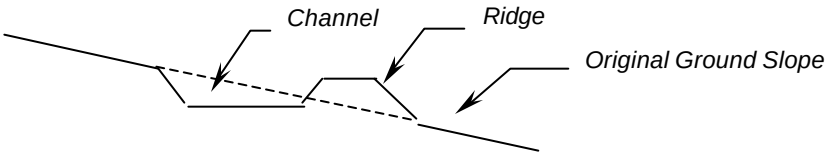
Max. Design Velocity (feet per second)	Channel Slope (percent)	Recommended Lining Material
< 2.5	< 0.5%	• Earth
2.5 - 4.5	< 2%	• Vegetation, Mulched & Netted or crimped • Vegetation with Temporary ECM • Earth & Permanent TRM
>4.5	< 10%	• Rock • Vegetation with permanent TRM
> 4.5	> 10%	• Rock or Concrete

Outlets. Diversion channels must be able to deliver the runoff to a stable outlet, at a point where outflow will not cause damage. Some type of outlet structure or special lining over the outlet section of the diversion channel may be required.

How are Runoff Diversions Maintained?

Runoff Diversions should be inspected after every major rainfall. Any needed repairs to the channel, lining or dike must be made promptly. Maintenance efforts must be adequate to preserve diversion capacity, ridge height, lining integrity, and outlet stability.

TYPICAL RUNOFF DIVERSION CROSS SECTION



NOTE: After a fire many trees are weakened from burning around the base of the trunk. The **trees can fall over or blow down without warning**. Shallow rooted trees can also fall. Therefore **be extremely alert when around burned trees**.